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The opinion in support of the decision being entered today was ***not*** written for publication and is ***not*** binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MIKKO LINDSTROM

Appeal No. 1997-2986
Application No. 08/260,784[1]

ON BRIEF

Before THOMAS, MARTIN, and LALL, Administrative Patent Judges.

MARTIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-6, 11-16, and 20-23. Claims 7-10 and 17-19 are objected to for depending on rejected claims.[2] We affirm-in-part.

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[1] Application for patent filed June 16, 1994.

[2] The Answer includes claim 10 among the rejected claims and also among the objected to claims. The examiner's communication (paper No. 20) dated October 16, 1998, explains that the objected to status is the correct status.

A. The invention

The invention relates to sorting and unloading finished pieces of various sizes and shapes that have been cut from sheet stock by a fabricating device. The specification explains (at 8, lines 5-10) that some of the programs used to control a fabricating device "are so-called 'nest' programs in which the pieces to be cut from a sheet blank are predefined according to their respective dimensions so that an optimal number of pieces may be cut from the sheet blank." When, as in the prior art, a plurality of such programs are run sequentially, the finished parts produced under the control of each program are sorted and directed to sorting addresses predefined for them in the respective nest program, with each sorting address referring to a location in the unloading area of the part sorting and unloading system (Spec. at 2, lines 10-18).

One of the problems encountered in such system is that where a large number of parts are to be produced, there may be insufficient addresses (Spec. at 3, lines 3-5). Another problem is that different nest programs may assign parts having different dimensions to the same address, creating an address conflict which the controller is not designed to arbitrate and which therefore must be resolved by the operator, possibly by stopping the production run (Spec. at 3, lines 6-16). Appellant states that his invention solves these problems by using

> a "denester" approach in which, prior to a production run, all of the nest programs to be run during the production run are reviewed and all data relevant to the to be cut pieces are retrieved . . . . Parts that have the same dimensions are assigned the same sorting address so that those same parts are directed to a particular location at the unloading area of the sorting and unloading system. [Spec. at 3, lines 18-27.]

B. The claims

Claims 1, 12, and 21 are the only independent claims on appeal. Claim 1, which is representative, reads as follows:

> 1. In a sheet fabricating environment in which worksheets are cut into finished pieces with each worksheet being cut in accordance with at least one program routine, a method of unloading said finished pieces comprising the steps of:
>
> identifying for each production run the program routines in accordance with whose programmed operations pieces of different dimensions are to be cut from said worksheets;
>
> retrieving from each of said program routines data relating to said to be cut pieces;
>
> utilizing said data retrieved from said program routines to compute optimal locations at at least

> one unloading means where finished pieces of the same dimension cut in accordance with different ones of said program routines are be moved to so as to prevent any conflict in unloading of finished pieces during [a] production run.

C. The references and ground of rejection

The references relied on by the examiner are:

Levine	4,554,635	Nov. 19, 1985
Taijonlahti et al. (Taijonlahti)	5,317,516	May 31, 1994

Claims 1-6, 11-16, and 20-23 stand rejected under 35 U.S.C. § 103 as unpatentable for obviousness over Levine in view of Taijonlahti.

D. The level of skill in the art

The level of skill in the art is represented by the references. See In re Oelrich, 579 F.2d 86, 91, 198 USPQ 210, 214 (CCPA 1978) ("the PTO usually must evaluate both the scope and content of the prior art and the level of ordinary skill solely on the cold words of the literature"); In re GPAC Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (Board did not err in adopting the approach that the level of skill in the art was best determined by the references of record).

E. Appellant's burden of persuasion on appeal

In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1455 (Fed. Cir. 1998), explains that:

> [t]o reject claims in an application under section 103, an examiner must show an unrebutted prima facie case of obviousness. See In re Deuel, 51 F.3d 1552, 1557, 34 USPQ2d 1210, 1214 (Fed. Cir. 1995). In the absence of a proper prima facie case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of prima facie obviousness or by rebutting the prima facie case with evidence of secondary indicia of nonobviousness. See id.

F. The merits of the rejection

Levine discloses computer-controlled apparatus for marking or cutting stock material into the pieces required to make custom sheet metal fittings. As shown in Figure 15, which shows the four patterns A-D needed to produce one fitting, the system determines how to arrange the patterns on the smallest appropriate piece of sheet stock in order to minimize waste

(col. 22, lines 24-28). Figure 16 shows patterns drawn on a roll of coil stock rather than on pieces of sheet stock (col. 2, lines 39-42). Figure 19 shows the groups of patterns for four different fittings on what appears to be a roll of coil stock (col. 23, lines 26-35). We agree with the examiner that the four sets of patterns in Figure 19 can be characterized as representing "several nested routines ready for cutting" (Answer at 7), as each of the sets of four patterns represents a single nest program. Levine further explains that a group of such patterns can be run together as a job lot:

> In addition to optimizing the usage of the sheet material, the microprocessor is programmed to identify groups of patterns of a common job lot so that a job lot can be identified and an inventory created. It lists the patterns in the order they are to be plotted on the plotting table and, where fabricators have numerical control tape readers at the coil line which feeds out the sheet material, the computer can also punch out a tape to directly operate the metal feed onto the plotting surface. [Col. 22, lines 29-38.]

Levine does not disclose any method or apparatus for sorting or unloading the cut pieces. For this teaching, the examiner relies on Taijonlahti. Taijonlahti's invention (see Figs. 1 and 2) is a conveyor mechanism 2 located between a shearing mechanism 1 and an unloading and handling mechanism 3 (col. 3, lines 16-23) and serving "as a buffering conveyor storage for compensating a momentary operating speed difference between the shearing mechanism as well as the unloading and handling mechanism" (col. 2, lines 54-58). The shearing mechanism is controlled by a computer 5 so as to cut a plate blank 4 into plates of various sizes, such as shown in Figure 3A, in accordance with a so-called grouping program (col. 3, lines 48-58), which corresponds to appellant's nest program. Plural plates of the same size (e.g., B_1-B_4) are carried in a stack by conveyor 2 (col. 4, lines 24-29). The plates are then transferred onto "a receiving conveyor 12, whereby said unloading and handling mechanism 3 is operated to carry them in programmed grouping and stacking fashion further onto a transport carrier, e.g.[,] a standard pallet 7, for further production or temporary storage" (col. 4, lines 20-24). Taijonlahti's claims 2 and 15 explain in more detail that the plates are transferred from the receiving conveyor means (2) onto the transport carrier means (pallet 7) "in a programmed fashion <u>grouped according to plate sizes</u> and/or as stacked by means of a manipulator or robot" (emphasis added). The unloading and handling mechanism 3 is preferably embodied as a manipulator or a robot operating on the so-called portal principle, comprising, e.g., "a gripping means 11 which is movable relative to supporting legs 8 and maneuvering assemblies 9 and 10 and engages mechanically the plates to be carried forward" (col. 3, lines 41-47). The examiner (Answer at 4) cites the "programmed grouping and stacking" operation of mechanism 3 as evidence that Taijonlahti also contemplates handling plated cut in accordance with a plurality of nest programs, i.e., a plurality of the claimed program routines. We agree that the patterns A-D_6 in Taijonlahti's Figure 3A can be considered to represent a first program routine and patterns E_1-K to represent a second program routine. Alternatively, patterns A-K can be considered to represent a single program routine and the patterns to be cut from the next plate blank (not shown, but which also can have the patterns shown in Figure 3A) to represent a second program routine.

The examiner argues that "[i]t would have been obvious . . . to employ the sorter of Taijonlahti with the cutting system of Levine because it would allow for easy transfer for further production" (Answer at 4), which we understand to mean that the examiner is proposing to modify Levine by adding Taijonlahti's conveyor 2 and unloading and handling mechanism

3. The examiner does not state whether Levine's cutting system is being used to cut pieces from a plurality of sheets of stock or from a roll of coil stock. Because this choice appears to have no effect on the merits of the rejection, we will assume the former.

Appellant does not argue that there is no motivation to combine the teachings of the references. Instead, appellant argues that "[t]he combination of Levine and Taijonlahti[,] if such combination is feasible," fails to satisfy the limitations of the claims (Brief at 22). For the following reasons, we agree only as to claims 6 and 16.

Comparing claim 1 to the combined teachings, the claimed "program routine" reads on Levine's job lot, which includes a plurality of patterns to be cut from plural sheets of stock. Appellant's argument that Levine's "job lot" programming concerns a single program rather than series of separate program routines (Reply Br. at 1-2) is unconvincing, because Levine's "job lot" programming, even if written as a single program, can be considered to consist of a plurality of program routines. Levine's identification of the groups of patterns to be included in a job lot satisfies claim 1's step of "identifying for each production run the program routines in accordance with those programmed operations pieces of different dimensions are to be cut from said worksheets." The "identifying" limitations of claims 12 and 21 are satisfied in the same way. Levine's listing of the patterns in a job lot satisfies claim 1's step of "retrieving from each of said program routines data relating to said to be cut pieces." The "retrieving" limitation of claim 12 is satisfied in the same way. While claim 21 more particularly specifies that the retrieved data "includ[es] the respective dimensions of all pieces to be cut from worksheets in accordance with said each program," this would have been obvious because it is necessary to know which finished pieces are to be stacked by Taijonlahti's apparatus on conveyors 2 and ultimately on pallet 7.

The examiner appears to be reading the claimed step of "utilizing said data retrieved from said program routines to compute optimal locations at at least one unloading means where finished pieces of the same dimension cut in accordance with different ones of said program routines are be moved" on the "programmed grouping and stacking" operation (Answer at 4), which is performed by the unloading and handling mechanism 3 when transferring plates to the transport carrier, i.e., pallet 7.[3]

We agree with the examiner that Taijonlahti's unloading and handling mechanism 3 will result in placing plates having the same dimension (e.g., parts 3A and 3B in Fig. 19) in a stack in one location on the carrier, i.e., pallet 7. Appellant criticizes this reasoning on the ground that there is

> [no] disclosure in either of the references that suggests that based on [the] retrieved data, optimal locations at an unloading means can be computed to prevent any conflict in the unloading of finished cut pieces. If anything, Levine per his Figs. 15, 16, 17, and 19, illustrate[s] the optimization of to be cut pieces on a laminar plate, while Taijonlahti discloses the optimal utilization of the space of the to be cut plate blank, per his Fig. 3A. In brief, the teachings of each of Levine and Taijonlahti relate to a single program routine for cutting parts from a plate blank. [Brief at 22.]

[3] Consequently, the examiner's assertion that "based upon the size of the plate cut, then the unloading mechanism [3] puts the cut piece in a proper location on the <u>conveyor</u>" (emphasis added) (Answer at 9) incorrectly recites the term "conveyor" instead of "carrier."

Appellant seems to be arguing that the claim language requires that finished pieces having the same dimensions produced in accordance with two or more program routines be placed in the same location on the pallet.[4] We do not agree. The language in question is broad enough to permit pieces of the same dimension produced in accordance with different program routines to be assigned to different locations. Claim 1, for example, recites "utilizing said data retrieved from said program routines to compute optimal locations at at least one unloading means where finished pieces of the same dimension cut in accordance with different ones of said program routines are to be moved to so as to prevent any conflict in unloading of finished pieces during a production run" (emphasis added). The terms "optimal" and "conflict," which are not defined in the claim or the specification and thus are to be given their broadest reasonable interpretations, In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997), are satisfied even if the combined teachings result in locating the plates made from two different sheets of stock (i.e., in

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[4] This relationship is, however, recited in dependent claim 23, discussed infra.

accordance with two different program routines) in two different areas of the pallet. Stacking identical plates made from a sheet of stock in a single location is "optimal" in the sense that it requires less space to accommodate the plates made from a sheet of stock than if stacking were not allowed. Storing plates of only one size at each location also avoids any conflict about which size plate is to be stored at that location. The corresponding limitation in claim 12 is satisfied in the same way. Claim 21's recitation of "partition[ing] the surface area of said unloading means into different locations each having a dimension corresponding to one of said dimensioned groups" is satisfied in the same way, because it does not require one-to-one correspondence, i.e., it does not preclude (a) two dimensioned groups from including pieces having the same dimension or, alternatively, (b) two locations from corresponding to the same dimensioned group.[5]

For the foregoing reasons, the "utilizing" limitations in claims 1, 12, and 21 are satisfied by Levine and Taijonlahti

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[5] Appellant's Figure 13B (steps 150, 152) discloses using an additional location when the first location for a piece of a given dimension becomes full.

even assuming that the finished pieces made from different sheets of stock in accordance with different program routines are located in different areas of pallet 7. The § 103 rejection is therefore affirmed as to claims 1, 12, and 21. The rejection is also affirmed as to dependent claims 2, 4, and 13, which are not separately argued.

Dependent claim 3 calls for dividing the operating area of the unloading means into zones and using addresses to identify the zones. Although Taijonlahti does not indicate that the surface of the pallet 7 is divided into areas having addresses, it would have been obvious in view of Taijonlahti's disclosure of implementing unloading and handling mechanism 3 as a manipulator or robot to use addresses to identify the various possible storage locations on pallet 7. The rejection is therefore affirmed with respect to this claim.

Claim 5 calls for the unloading means to include a receiver means which can be positioned relative to the sorting means of unargued claim 4, which specifies that finished pieces of a given dimension are moved to a particular location at the sorting mechanism. These limitations of claims 4 and 5 are satisfied because Taijonlahti's pieces move to particular locations on the belt of conveyor 2. Claim 5 further specifies that pieces are transferred to particular locations on the receiver means from corresponding locations on the sorting means. It would have been obvious to store the plates on pallet 7 in the same number of locations that they occupy on the conveyor belt. The rejection of this claim is also affirmed.

Claim 6 calls for unloading means to have a conveyor with a plurality of tiltable sections for enabling each finished piece of a given dimension to be deposited onto a corresponding locations at the storage area of the receiver means in the unloading means. Although Taijonlahti shows a tiltable section which can be used to deliver "reject material and/or small pieces or the like from conveyor mechanism 2 onto a receiving structure 13, such as pallets or belt or like conveyors therebelow" (col. 4, lines 48-50), only one tiltable section is disclosed or suggested. The rejection of claim 6 is therefore reversed.

The rejection of claims 11, 14, 20 is affirmed for the reasons given in the discussion of similar claim 3.

The rejection of claims 15 and 22 is affirmed for the reasons given in the discussion of similar claim 5.

The rejection of claim 16 is reversed for the reasons given in the discussion of similar claim 6.

Claim 23, unlike the other claims, calls for storing finished pieces having the same dimension produced in accordance with different program routines (e.g., from different sheets of stock) in the <u>same</u> unloading location (i.e., pallet location). Specifically, the claim recites:

> extracting relevant data from a program added to said production run before the end of said production run;
> analyzing from the extracted data the dimensions of pieces to be cut from worksheets in accordance with said added program; [and]
> routing each piece cut from said added program having the same dimension as one of said dimensioned groups of cut pieces to the same location on said surface area of said unloading means where said one dimensioned group of cut pieces are routed.

We note that the claim language does not require that the program be added after the start of the production run, and thus can refer to the identification of the last set of patterns in a job lot. Taijonlahti does not explain where identical pieces are stored on pallet 7 when they appear in different stacks on conveyor 2, as would happen if Taijonlahti's apparatus is used to sort and store pieces cut from two sheets of stock in accordance with a two identical program routines. Nevertheless, we are of the opinion that it would have been obvious to deposit identical pieces made in accordance with different program routines (e.g., from different sheets of stock) in the same location on the pallet in order to conserve space on the pallet. Consequently, the rejection of claim 23 is also affirmed.

In summary, the rejection is affirmed as to claims 1-5, 11-15 and 20-23 and is reversed as to claims 6 and 16.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JAMES D. THOMAS Administrative Patent Judge	)
	) BOARD OF PATENT
JOHN C. MARTIN Administrative Patent Judge	) APPEALS AND
	) INTERFERENCES
PARSHOTAM S. LALL Administrative Patent Judge	)

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